

DATE:
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PROFESSIONAL ENGINEER LIC. No. 12175

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No.	REVISION	DATE	BY	CHK

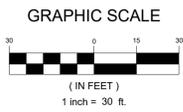
EROSION & SEDIMENT CONTROL PLAN
TOWN OF TOWNSEND
TOWNSEND POLE BARN
NEW CASTLE COUNTY
DELAWARE

DRAWN BY	DESIGN BY	CHECKED BY	SCALE
JMB	EVO	CJF	AS NOTED
DATE:	10-21-2021		
JOB No.:	3 of 4		
DNTET097			

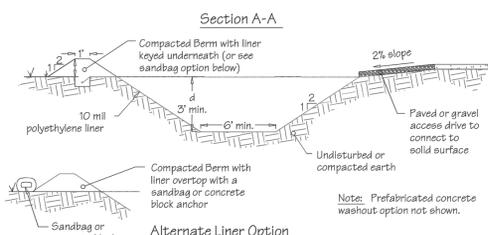
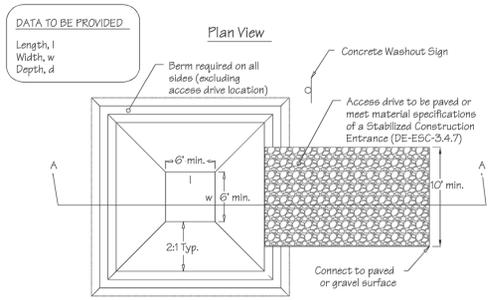


LEGEND

- WATERBAR (TYPICAL) 
- INLET PROTECTION (TYPICAL) 
- FILTER SOCK (TYPICAL) 
- LIMIT OF DISTURBANCE (TYPICAL) 
- FILTER BAG 
- ROCK FILTER 

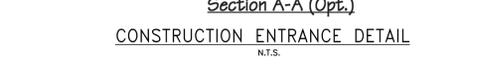
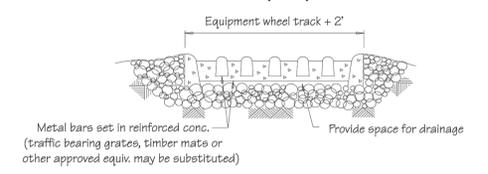
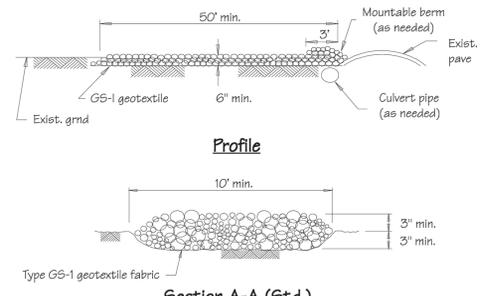
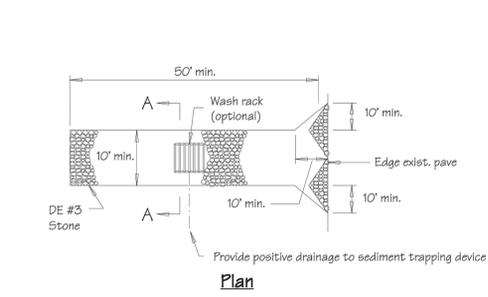


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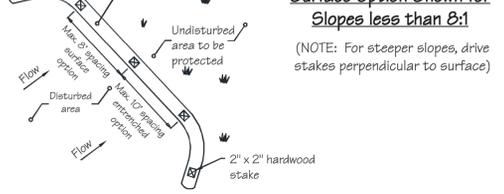
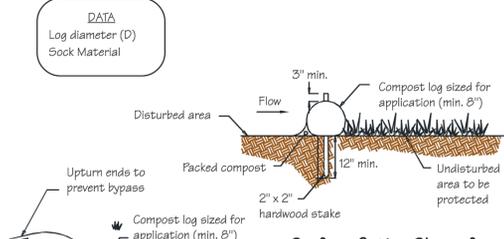


- Construction Notes:**
1. Locate washout area a minimum of 50 feet from open channels, storm drain inlets, wetlands or waterbodies.
 2. Locate washout area so that it is accessible to concrete equipment (serve with a minimum 10 foot wide gravel accessway), but so it is not in a highly active construction area causing accidental damage.
 3. Minimum dimensions for prefabricated units are 4 feet by 4 feet by 1 foot deep with a minimum 4 mil polyethylene plastic liner. Minimum dimensions for constructed concrete washout areas are 6 feet by 6 feet by 3 feet deep, with a minimum 10 mil polyethylene liner, 2:1 side slopes, and a 1 foot high by 1 foot wide compacted fill berm.
 4. The liner must be free of tears or holes and placed over smooth surfaces to prevent puncturing. For excavated washouts, anchor the liner underneath the berm or overlap with sandbags or concrete blocks to hold in place.
 5. Provide a sign designating the washout area, and for large construction sites, provide signs throughout directing traffic to its location.
 6. Allow washed out concrete mixture to harden through evaporation of the wastewater. Once the facility has reached 75 percent of its capacity, remove the hardened concrete by reusing the broken aggregate onsite, recycling, or disposing of offsite. The hardened material can be buried on site with minimum of 1 foot of clean, compacted fill.
 7. Apply a new liner before reusing the station for additional washouts after maintenance has occurred.

CONCRETE WASHOUT DETAIL
N.T.S.



CONSTRUCTION ENTRANCE DETAIL
N.T.S.



NOTE: Manufacturer's recommendations supersede any installation details shown for this practice

Construction Notes:

1. Prior to installation, clear bedding area of obstructions including rocks or debris larger than 1 inch and fill in any sharp depression areas.
2. If socks are prepared on-site, fill the sock fabric using a pneumatic blower so that the logs are rigid and do not deform. Terminate at the desired length.
3. For trenched applications, excavate 2 to 4 inches below grade along the width and length of the compost filter log.
4. Install the compost filter logs perpendicular to the flow direction and parallel to the slope with the beginning and end of the installation pointing up the slope a minimum of 1 foot elevation difference. On sites where this is not possible, upturn at a minimum length of 10' at a 30 degree angle to prevent runoff bypass.
5. For untrrenched applications, blow or hand pack soil, mulch, or compost on the upslope side of the log, filling the bottom void area.
6. Stake the filled log every 10 feet maximum through the center of the sock for trenched applications, or every 8 feet for untrrenched. The stake shall be a 2" by 2" hardwood. It should extend 12" below grade and protrude at least 3" above the top of the sock. If located on a slope greater than 8:1, the stake shall be angled downslope at a 45 degree angle to prevent the force of the water from dislodging to log.
7. When the length of the compost filter log needed exceeds the available compost filter sock length, the next sock shall be overlapped a minimum of 12" before being filled, and a stake placed through both socks at the overlap.
8. Remove accumulated sediment when it has reached half of the effective height of the log.
9. Inspect weekly and after rain event. If sock is degrading or the sock is failing, vegetate to secure the compost, replace the log, or reinforce with an additional log. If the log has been crushed due to construction equipment, it can be "fluffed" back to its effective height. If the effective height can no longer be restored, the log shall be replaced or reinforced with an additional compost filter log.

COMPOST FILTER SOCK DETAIL
N.T.S.

Construction Notes:

1. Stone size - Use DE #3 stone.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than size (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Geotextile - Type GS-1 placed over the entire area prior to placing of stone.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Vehicle wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Inspection - Periodic inspection and needed maintenance shall be provided after each rain.

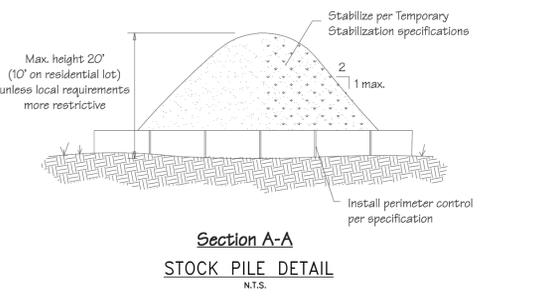
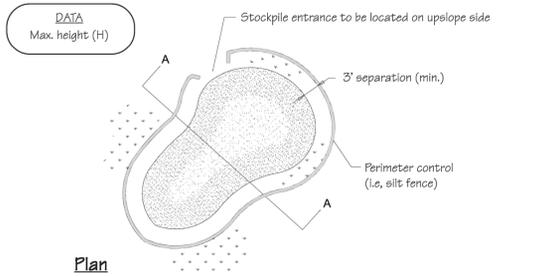
PERMANENT SEEDING AND SEEDING DATES												
Seeding Mixtures	Seeding Rate ¹	Optimum Seeding Dates ²										Remarks
		Coastal Plain		Piedmont		All ³						
Mix No.	Certified Seed ⁴	lb/ac	lb/1000 sq.ft.	2/1-4/30	5/1-8/14	8/15-10/31	3/1-5/14	5/15-7/31	8/1-10/31	10/31-2/1		
1	Tall Fescue	140	3.2	A	O	A	O	A	O	A	Good erosion control mix. Tolerant of low fertility soils. Lovegrasses very difficult to mow. Germinates only in hot weather.	
	Weeping Lovegrass	10	0.23									
2	Daertrugue Sheep Fescue	30	0.69	A	O	A	O	A	O	A	Good erosion control mix. Tolerant of low fertility soils. Good wildlife cover and food.	
	Common Lespedeza ⁵	30	0.69									
	Insulated	15	0.35									
3	Tall Fescue (Turf-type) or Strong Creeping Red Fescue or Perennial Ryegrass	50	1.15	O	A	O	O	A	O	A	Good erosion control mix. Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation.	
	plus Flatpea ⁶	15	0.34									
4	Strong Creeping Red Fescue	100	2.3	O	A	O	O	A	O	A	Suitable waterway mix. Canada Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.	
	Kentucky Bluegrass	70	1.61									
	Perennial Ryegrass or Redtop	15	0.35									
	plus White Clover ⁷	3	0.07									
5	Switchgrass ⁸ or Coastal Panicgrass	10	0.23								Native warm-season mixture. Tolerant of low fertility soils. Drought tolerant. Poor shade tolerance. N fertilizer discouraged - weeds.	
	Big Bluestem	10	0.23									
	Little Bluestem	5	0.11									
	Indian Grass	5	0.11									
6	Tall Fescue (Turf-type) (Blend of 3 cultivars)	150	3.5	O	A	O	O	A	O	A	Managed filter strip for nutrient uptake.	
7	Tall Fescue	150	3.5	O	A	O	O	A	O	A	Three cultivars of Kentucky Bluegrass. Traffic tolerant.	
	Ky. Bluegrass (Blend)	20	0.46									
	Perennial Ryegrass	20	0.46									
8	Big Bluestem ⁹	10	0.23	O	A	O	O	A	O	A	All species are native. Indian Grass and Bluestem have highly seeds. Plant with a specialized native seed drill.	
	Indian Grass ⁹	10	0.23									
	Little Bluestem ⁹	5	0.11									
	Creeping Red Fescue	30	0.69								Creeping Red Fescue will provide erosion protection while the warm season grasses get established.	
	plus one of:											
	Partridge Pea	5	0.11									
	Bush Clover	3	0.07									
	Wild Indigo	3	0.07									
	Showy Tick-Trefoil	2	0.05									

TEMPORARY SEEDING BY RATES, DEPTHS AND DATES													
Mix #	Species ¹	Seeding Rate	Optimum Seeding Dates ¹										Planting Depth ³
			Coastal Plain		Piedmont		All						
		lb/ac ¹	lb/1000 sq.ft.	2/1-4/30	5/1-8/14	8/15-10/31	3/1-5/14	5/15-7/31	8/1-10/31	10/31-2/1			
1	Barley	125	4	O	A	O	O	A	O	A	1-2 inches		
2	Oats	125	4	O	A	O	O	A	O	A	2-3" sandy soils		
3	Rye	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils		
4	Perennial Ryegrass	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils		
5	Annual Ryegrass	125	4	O	A	O	O	A	O	A	0.5 inches 1-2" sandy soils		
6	Winter Wheat	125	4	O	A	O	O	A	O	A	1-2 inches 2-3" sandy soils		
7	Foxtail Millet	30 PLS	0.7								0.5 inches 1-2" sandy soils		
8	Pearl Millet	20 PLS	0.5								0.5 inches 1-2" sandy soils		

PERMANENT SEEDING & DATES												
Seeding Mixtures	Seeding Rate ¹	Optimum Seeding Dates ²										Remarks
		Coastal Plain		Piedmont		All ³						
Mix No.	Certified Seed ⁴	lb/ac	lb/1000 sq.ft.	2/1-4/30	5/1-8/14	8/15-10/31	3/1-5/14	5/15-7/31	8/1-10/31	10/31-2/1		
9	Redtop	75	1.72	O	A	O	O	A	O	A	Quick stabilization of disturbed sites and waterways	
	Creeping Bentgrass	35	0.8									
	Sheep Fescue	30	0.69									
	Rough Bluegrass	45	1									
10	Reed Canarygrass ⁵	10	0.23	A							Good erosion control, wildlife cover and wetland revegetation.	
Residential Lawns												
11	Tall Fescue	100	2.3	O	A	O	O	A	O	A	High value, high maintenance, light traffic, irrigation necessary. Well drained soils, full sun.	
	Perennial Ryegrass	25	0.57									
	Kentucky Bluegrass Blend	30	0.69									
12	Tall Fescue	100	2.3	O	A	O	O	A	O	A	Moderate value, low maintenance, traffic tolerant.	
	Perennial Ryegrass	25	0.57									
	Sheep Fescue	25	0.57									
13	Creeping Red Fescue	50	1.15	O	A	O	O	A	O	A	Shade tolerant, moderate traffic tolerance, moderate maintenance.	
	Chewings Fescue	50	1.15									
	Rough Bluegrass	20	0.4									
	Kentucky Bluegrass	20	0.4									
14	Creeping Red Fescue	50	1.15	O	A	O	O	A	O	A	Shade tolerant, moisture tolerant.	
	Rough Bluegrass or Chewings Fescue	90	2.1									
15	K-31 Tall Fescue	150	3.5	O	A	O	O	A	O	A	Monoculture, but performs well alone in lawns. Discouraged.	

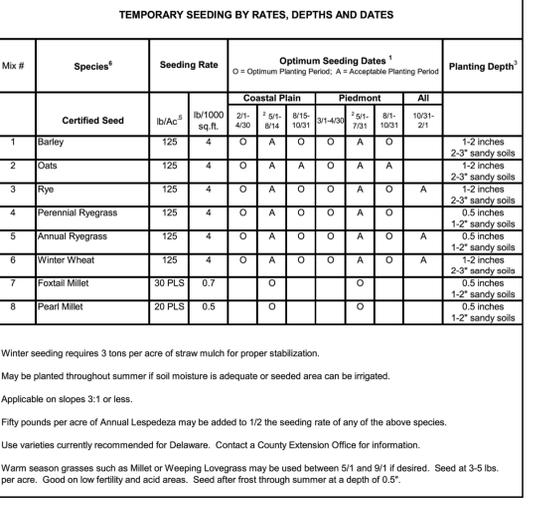
1. When hydroseding is the chosen method of application, the total rate of seed should be increased by 25%.
2. Winter seeding requires 3 tons per acre of straw mulch. Planting dates listed above are average for Delaware. These dates may require adjustment to reflect local conditions.
3. All seed shall meet the minimum purity and minimum germination percentages recommended by the Delaware Department of Agriculture. The maximum % of weed seeds shall be in accordance with Section 1, Chapter 24, Title 3 of the Delaware Code.
4. Cool season species may be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
5. All leguminous seed must be inoculated.
6. Warm season grass mix and Reed Canary Grass cannot be mowed more than 4 times per year.
7. Warm season grasses require a soil temperature of at least 50 degrees in order to germinate, and will remain dormant until then.

PERMANENT SEEDING & DATES
N.T.S.



CONSTRUCTION NOTES:

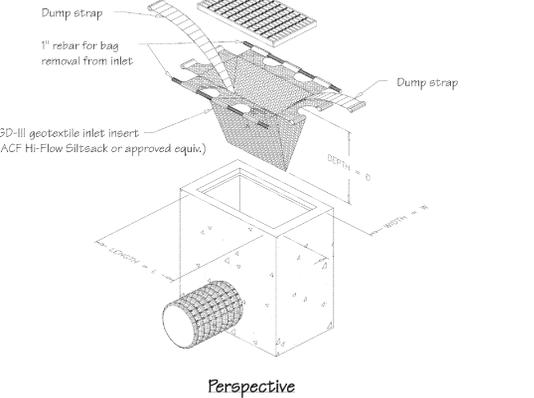
1. Locate stockpiles so that they are 50 feet from any storm drain inlet, open channel, wetland or waterbody. Redirect any concentrated flow around the stockpile using an approved erosion and sediment control measure.
2. Secure the perimeter of the stockpile with an approved erosion and sediment control perimeter device.
3. If stockpile is to remain inactive for more than 14 calendar days, the stockpile must be vegetated. Follow the temporary vegetation specifications. The vegetation chosen shall last the duration of the stockpile; the stockpile shall be restabilized if the temporary vegetation dies or erosion results.



TEMPORARY SEEDING & DATES
N.T.S.

1. Winter seeding requires 3 tons per acre of straw mulch for proper stabilization.
2. May be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
3. Applicable on slopes 3:1 or less.
4. Fifty pounds per acre of Annual Lespedeza may be added to 1/2 the seeding rate of any of the above species.
5. Use varieties currently recommended for Delaware. Contact a County Extension Office for information.
6. Warm season grasses such as Millet or Weeping Lovegrass may be used between 5/1 and 9/1 if desired. Seed at 3-5 lbs. per acre. Good on low fertility and acid areas. Seed after frost through summer at a depth of 0.5".

PERMANENT SEEDING & DATES
N.T.S.



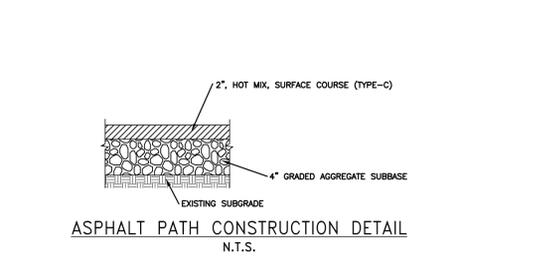
CONSTRUCTION NOTES:

1. This practice shall only be used in situations in which Inlet Protection - Type 1 cannot be used due to site constraints. These include, but are not limited to partially completed parking areas, streets, roads, etc.
2. It may be necessary to transition from Type 1 to Type 2 Inlet Protection as construction proceeds.
3. For areas where there is a concern for oil run-off or spills, insert shall meet one of the above specifications with an oil-absorbent pillow or shall be made completely from an oil-absorbent material with a woven pillow.

Materials:

The geotextile inlet insert shall meet or exceed the specifications of Type GD-III geotextile in accordance with Appendix A-3 of the Delaware Erosion & Sediment Control Handbook.

INLET PROTECTION DETAIL
N.T.S.



Permanent Stabilization Mixtures for Various Uses			
Application	Planting Mixtures by Soil Drainage Class		
	Well Drained Soils ¹	Poorly Drained Soils ²	
Residential/commercial lots	11,12,13,15	14,15	
Residential open space	8	Contact plant specialist for site specific recommendations.	
Pond and channel banks, dikes, berms and dams	2,4	9,10,14	
Drainage ditches, swales, detention basins	3,4,13	9,14	
Filter strips	2,5,6	6,13	
Grassed waterways, spillways	1,2,4	6,9	
Recreation areas, athletic fields	7,15	14,15	
Steep slopes and banks, roadsides, borrow areas	1,2,3,4	4,6	
Sand and gravel pits, sanitary landfills	1,2,3,5	3,4	
Drilled material, sportbanks, borrow areas	1,2	9,10	
Streambanks and shorelines ²	2,3	2,3	
Utility rights-of-way	1,2,3,4	3,14	

1. Refer to Fig. 3.4.3.3a for detailed information on seed mixes.
2. Refer to Chapters 16 and 18 of the NRCS Field Engineering Manual for additional measures.
NOTE: Refer to NRCS critical area planting standard for additional seed mixtures.

SPECIES	RECOMMENDED SEED VARIETIES
Tall Fescue	Alamo E, Apache II, Guardian, Rebel II, Shenandoah, Safari, Crossfire, Titan 2, Duke, Barrington, Comstock, Crossfire, Dominion, Heritage, Plantation, Rebel 2000, Titan 2
Kentucky Blue Grass	Low Maintenance Varieties: Barinus, Caliber, Eggleston, Freedom, Haga, Livingston, Merit, Midnight, Monocopy, Washington Shade Tolerant Varieties: Princeton, America, Brilliant, Champagne, Coventry, Unique, Liberator, Moonlight, Showcass, Nuglade, Compact
Perennial Ryegrass	Palmer III, Blazer II, Partridge, Saville, Pinnacle, Pick MDR
Creeping Red Fescue	Cindy Lou, Jasper, Dawson, Permatan, Flyn, Ruby, Salem
Red Top	Streaker, Barracuda
Chewings Fescue	Longfellow, Jamestown, Discovery, Scalds, Bighorn

NOTES:
1. The grass species listed in Fig. 3.4.3.3a are often available in many varieties. The seed choices listed above are the recommended varieties based on regional performance and availability.
2. The varieties listed above are examples of recommended varieties. Contact University of Delaware, Cooperative Extension Service for additional information.

PERMANENT SEEDING TABLE
N.T.S.

RVE
1901
REMINGTON & VERNICK ENGINEERS
UNIVERSITY OFFICE PLAZA
BELLEVUE BUILDING
262 CHAPMAN ROAD, SUITE 105
NEWARK, DE 19702
(302) 266-0212, FAX (302) 266-6208
WEB SITE ADDRESS: WWW.RVE.COM
~ENGINEERING EXCELLENCE~

DATE: _____
CHRISTOPHER J FAZIO
PROFESSIONAL ENGINEER LIC. NO. 12175

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